CLAIMS

What is claimed is:

1. A light emitting diode device, comprising:

a plurality of light emitting diodes connected together in series;

a plurality of parallel elements connected in parallel with the plurality of light emitting diodes;

a current monitor connected with the plurality of light emitting diodes that measures an amount of current flowing from the plurality of light emitting diodes and generates a current flow signal; and

a voltage converter that supplies a current to the plurality of light emitting diodes as a function of the current flow signal and a commanded current signal.

2. The device of claim 1, wherein the commanded current signal comprises a direct current signal.

3. The device of claim 1, wherein the commanded current signal comprises a pulse width modulated signal.

4. The device of claim 3, wherein the commanded current signal is generated by a microprocessor.

5. The device of claim 1, wherein the plurality of parallel elements comprises a plurality of zener diodes.

6. The device of claim 1, wherein a parallel element is connected in parallel with a light emitting diode.

7. The device of claim 1, wherein a parallel element is connected in parallel with multiple light emitting diodes.

8. The device of claim 1, further comprising:

a temperature sensor that measures a temperature associated with at least one of the plurality of light emitting diodes and generates a temperature signal.

9. The device of claim 8, further comprising:

a temperature derating circuit that reduces the current to the plurality of light emitting diodes the temperature signal exceeds a temperature threshold.

10. The device of claim 9, wherein the temperature derating circuit adjusts the commanded current signal such that the voltage converter supplies less current to the plurality of light emitting diodes.

11. The device of claim 9, wherein the temperature sensor measures a solder temperature near a light emitting diode.

12. The device of claim 11, wherein the linear temperature sensor comprises a temperature dependant resistor.

13. The device of claim 12, wherein a terminal of the temperature dependant resistor and a cathode terminal of a light emitting diode are thermally interconnected.

14. The device of claim 9, wherein the temperature derating circuit comprises a microprocessor.

15. The device of claim 14, wherein the temperature derating circuit provides a signal to the voltage converter as a function of a measured temperature and a temperature correction factor table.

16. The device of claim 8, further comprising:

a temperature compensation circuit that adjusts the current to the plurality of light emitting diodes as a function of the measured temperature.

17. The device of claim 16, the temperature compensation circuit adjusts the current to the plurality of light emitting diodes such that the plurality of light emitting diodes have a substantially consistent luminous intensity when the measured temperature increases.

18. The device of claim 1, wherein the light emitting diode control device is a band limited low electromagnetic interference circuit.

19. The device of claim 1, wherein the plurality of parallel elements being connected in parallel with the plurality of light emitting diodes such that current is

routed around a light emitting diode with a failure, where the failure is an open circuit.

20. The device of claim 1, wherein the plurality of light emitting diodes are adapted to provide back lighting for an active matrix liquid crystal display.

21. A display unit adapted for an automotive application, comprising:

a liquid crystal display and;

a backlighting array comprising a plurality of light emitting diodes in a series configuration and a plurality of parallel elements connected in parallel with the light emitting diodes such that current is routed around a light emitting diode with a failure when the failure comprises an open circuit.

22. The display unit of claim 21, further comprising:

a temperature derating circuit electrically connected with the backlighting array, wherein the temperature derating circuit measures a light emitting diode temperature and reduces a current supplied to the backlighting array if the light emitting diode temperature exceeds a threshold.

23. The display unit of claim 22, further comprising:

a temperature compensation circuit electrically connected with the backlighting array, wherein the temperature compensation circuit measures a light emitting diode temperature and adjusts the current supplied to the backlighting array as a function of the light emitting diode temperature such that the plurality of light

emitting diodes have a substantially consistent luminous intensity when the light emitting diode temperature increases.

24. The display unit of claim 23, further comprising:

a microprocessor-based light emitting diode controller that provides a pulse width modulated signal that controls the intensity of the light emitting diode array.

25. A method of controlling a series light emitting diode array, comprising:

monitoring a temperature of the light emitting diode array at a node connected with a light emitting diode; and

adjusting an input current to the light emitting diode array as a function of the temperature.

26. The method of claim 27, further comprising:

monitoring a current from the light emitting diode array; and

adjusting the input voltage as a function of the current.